

What is claimed is:

1. A torch cutter exhaust system comprising:

a torch;

✓ an exhaust shroud at least partially encircling a discharge tip of the torch and mounted to the torch for movement therewith;

✓ a table located beneath the torch to support a stock material while the stock material is being cut by the torch;

✓ a gantry movably mounted to the table and onto which the torch and exhaust shroud are mounted;

✓ a duct mounted to the gantry and having an input end and an output end, the input end of the duct being connected to the exhaust shroud; and

a flexible exhaust hose located alongside the table having an input end connecting to the output end of the duct and an output end for connection to a vacuum source such that the vacuum source creates a low pressure area in the immediate vicinity of the discharge tip of the torch, the input end of the exhaust hose moving in unison with the gantry.

2. The torch cutter exhaust system of claim 1 in which the exhaust shroud comprises a hollow enclosure having at least one input port and an output port.

3. The torch cutter exhaust system of claim 1 in which the exhaust shroud comprises a hollow, crescent-shaped body having an intake port and an exhaust port.

4. The torch cutter exhaust system of claim 1 in which the exhaust shroud comprises a hollow, crescent-shaped body with an intake port and an arcuate outer wall having an exhaust port, the body having a pair of free ends and a base, the body having a flow area that gradually increases from the free ends to the base.

5. The torch cutter exhaust system of claim 1 in which the exhaust shroud comprises a hollow enclosure having an inner arcuate surface, an outer arcuate surface, an upper surface, a lower surface having an input port, and an output port on the outer surface of the enclosure

connecting to the input end of the duct and to which the fluid flow is directed.

6. The torch cutter exhaust system of claim 1 in which the exhaust shroud comprises a hollow, crescent-shaped enclosure, and having a plurality of input ports defined by an arcuate inner wall of the enclosure separated by baffles within the enclosure to direct fluid flow, and an output port on an outer wall of the enclosure opposite the inner wall of the enclosure connecting to the first end of the duct and to which the fluid flow is directed.

7. The torch cutter exhaust system of claim 1 in which the exhaust shroud comprises a hollow, crescent-shaped body having an intake port, an arcuate inner surface, an exhaust port, and in which the discharge tip of the torch is approximately equidistant from the arcuate inner surface of the body.

8. The torch cutter exhaust system of claim 1 in which the exhaust shroud comprises:  
a hollow, crescent-shaped body with an inner open arcuate wall defining an intake port and an arcuate outer wall having an exhaust port;  
the body having a pair of free ends, a base, an upper surface, and a lower surface, the upper and the lower surfaces joining the free ends and the base; and in which  
the upper and lower surfaces diverge from each other from the free ends to the base.

9. The torch cutter exhaust system of claim 1 in which the exhaust shroud comprises:  
a hollow, crescent-shaped body with an inner arcuate wall, an outer arcuate wall having an exhaust port, an upper surface, and a lower surface having a plurality of input ports, the inner arcuate wall and the outer arcuate wall being separated by a variable distance;  
the inner arcuate wall having a pair of free ends and a central region; and in which  
the distance between the outer arcuate wall and the inner arcuate wall at the free ends is less than the distance between the outer arcuate wall and the inner arcuate wall at the central region.

10. The torch cutter exhaust system of claim 1 further comprising:

a track alongside the table;

a roller carried for rolling movement along the track;

✓ a wheel rotationally attached to the roller for movement along the track, the wheel being rotatable independently of the movement of the roller; and

a cable loop attached to the input end of the exhaust hose and the output end of the exhaust hose, and passing over the wheel such that a portion of the cable and a portion of the exhaust hose are partially supported by the wheel as the gantry moves from one end of the table to the opposite end.

11. The torch cutter exhaust system of claim 1 further comprising:

a track alongside the table;

a plurality of rollers carried for rolling movement along the track;

a corresponding plurality of wheels rotationally attached to the rollers for movement along the track, the wheels being rotatable independently of the movement of the rollers; and

a cable loop attached to the input end of the exhaust hose and the output end of the exhaust hose, which is adapted to be fixed, and passing over the wheels such that a portion of the cable and a portion of the exhaust hose are partially supported by the wheels as the gantry moves from one end of the table to the opposite end.

12. An exhaust shroud to capture fluid debris produced by a torch cutter comprising:

a generally crescent-shaped hollow enclosure having an inner arcuate surface, the inner arcuate surface adapted to partially surround a discharge tip of a torch;

at least one input port; and

an output port on the enclosure for connection to a duct.

13. The exhaust shroud of claim 12 in which the input port comprises a plurality of input ports located along the inner arcuate surface separated by baffles within the hollow enclosure to direct fluid flow to the output port.

14. The exhaust shroud of claim 12 in which:

the enclosure has two free ends and a base, the output port being connected to the base, the enclosure having a gradually increasing flow area from the free ends to the base.

15. The exhaust shroud of claim 12 in which the enclosure is:

a hollow, crescent-shaped body having an inner arcuate wall, an upper surface, a lower surface having an intake port, and an arcuate outer wall having an exhaust port;

the body having a pair of free ends and a base, the upper and the lower surfaces joining the free ends and the base; and in which

the upper and lower surfaces diverge from each other from the free ends to the base.

16. The exhaust shroud of claim 12 in which the enclosure is:

a hollow, crescent-shaped body with an inner arcuate wall, an intake port, and an arcuate outer wall having an exhaust port, the inner arcuate wall and the arcuate outer wall being separated by a variable distance;

the inner arcuate wall having a pair of free ends and a central region, and in which

the distance between the arcuate outer wall and the inner arcuate wall at the free ends is less than the distance between the arcuate outer wall and the inner arcuate wall at the central region.

17. The exhaust shroud of claim 12 in which the enclosure is:

a hollow, crescent-shaped body with an inner open arcuate wall defining an intake port and an arcuate outer wall having an exhaust port, the inner open arcuate wall and the arcuate outer wall being separated by a variable distance;

the body having a pair of free ends, a base, an upper surface, and a lower surface, the upper and the lower surfaces joining the free ends and the base, and in which the upper and lower surfaces diverge from each other from the free ends to the base;

the inner open arcuate wall having a central region; and in which

the distance between the arcuate outer wall and the inner open arcuate wall at the free ends is less

than the distance between the arcuate outer wall and the inner open arcuate wall at the central region.

18. A moveable exhaust assembly for a torch cutter comprising:

a support platform;

a gantry moveably mounted to the support platform;

an exhaust shroud carried by the gantry for collecting exhaust from a torch;

a conduit mounted to the gantry to move therewith, and having an intake end connected to the exhaust shroud and a discharge end;

a flexible exhaust hose having an intake end and a discharge end, the intake end of the exhaust hose being connected to the discharge end of the conduit, the discharge end of the exhaust hose being fixed relative to the support platform;

a track alongside the support platform;

a plurality of rollers moveably mounted to the track;

a plurality of wheels each rotationally attached to one of the rollers such that each of the wheels can rotate independent of the movement of the rollers along the track;

a plurality of spacebars, each located between two of the rollers to fix a distance between the rollers; and

a cable loop attached to the intake end of the exhaust hose and the discharge end of the exhaust hose, and passing over the wheels such that a portion of the cable and a portion of the exhaust hose are partially supported by the wheels as the gantry moves from one end of the table to the opposite end.

19. A method of exhausting fluid debris from a region of space proximately surrounding a moving discharge tip of a torch, comprising the steps of:

at least partially encircling the discharge tip of the torch with an exhaust shroud;

connecting the exhaust shroud, a conduit, and a flexible exhaust hose in series to a vacuum

source;

supporting a stock material with a support platform located beneath the torch while the stock material is being cut by the torch;

moving a gantry, onto which the torch and exhaust shroud are mounted, over the support platform;

creating with the vacuum source a low pressure area in the immediate vicinity of the discharge tip of the torch via the exhaust shroud, the conduit, and the exhaust hose, the conduit and an input end of the exhaust hose moving in unison with the gantry; and

supporting the exhaust hose with a set of wheels rotationally mounted to a corresponding set of rollers, the rollers being spaced a fixed distance apart and free to travel on a track.

20. The method of claim 19 further comprising the step of using a cable loop attached to the input end of the exhaust hose and an output end of the exhaust hose to move the exhaust hose onto the wheels.